

Appl. No. : 09/676,727
Filed : September 29, 2000

REMARKS

The foregoing amendments are responsive to the October 17, 2007 Office Action and the December 27, 2007 Advisory Action. Applicant respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Response to Rejection of Claims 1-22, 34, and 40-55 Under 35 U.S.C. 101

In the Office Action of October 17, 2007 the Examiner rejected Claims 1-22, 34, and 40-55 under 35 U.S.C. 101 because the invention disclosed in the claims are directed to non-statutory subject matter. The Advisory Action of 12/27/2007 maintained this rejection.

In the Office Action of October 17, 2007 (Page 4, Section 9-1), the Examiner stated,

(I) "Claims 1-22, 34, 36-37, and 40-55 are directed to the manipulation of abstract ideas of data compression, calculating composite sources and testers, and transforming system of equations. This claimed subject matter lacks a practical application of a judicial exception (law of nature, abstract idea, naturally occurring article/phenomena) since it fails to produce a useful, concrete, and tangible result."

In support of this rejection, the Examiner quoted from two sections of the MPEP. First, Examiner quoted from MPEP 2106 IV C 2 (2) a), which has the heading "USEFUL RESULT":

(II) "Likewise, a claim that can be read so broadly as to include statutory and non statutory subject matter must be amended to limit the claim to a practical application. In other words, if the specification discloses a practical application of a section 101 judicial exception, but the claim is broader than the disclosure such that it does not require a practical application, then the claim must be rejected."

Second, Examiner quoted from MPEP 2106 IV C 2 (2) b) which has the heading "TANGIBLE RESULT":

(III) "The tangible requirement does not necessarily mean that a claim must be either tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a 35 U.S.C. 101 judicial exception, in that the process claim must set forth a practical application of that judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical application.")."

Examiner's first statement quoted above, (I), argues that the claimed subject matter lacks a practical application of a judicial exception. Applicant asserts that this statement is contrary to MPEP 2106.01(I) which states:

"In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035."

Recent decisions of the Board of Patent Appeals and Interferences repeatedly quote this section of the MPEP. For example, Appeal 2007-1546 on Application number 10/054029, decided on 12/21/2007, states on Page 5:

"See *Manual of Patent Examining Procedure* (MPEP) §2106.01(I), p. 2100-18 (8th Ed. Rev. 6, Sept 2007), which spells out how one may avoid as having claims interpreted as directed to software *per se*:

'[A] claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory.' Cf. instant claim 25, not rejected under 101, drawn to 'a computer readable medium having instructions for causing a computer to execute a method...'"

Applicant has amended the claims to clarify their use on a computer. This satisfies the requirement for a useful, concrete and tangible result. Applicant respectfully asserts that no further justification on this issue is required. Nevertheless, Applicant responds below to Examiner's reasoning regarding the "useful result" and "tangible result" issues.

Examiner's statement (II) described above provides a quote from MPEP on the issue of the requirement of a "USEFUL RESULT." Specifically, Examiner quotes a discussion pertaining to a disclosed invention that provides a useful result, while the claimed invention is not limited to a useful result. Applicant asserts that all of the present claims are limited to an invention with a practical result. The implementation of the invention on a computer provides a practical result (as MPEP 2106.01 (I) acknowledges).

Furthermore, the various claims recite additional useful results. Some of these results are regarding compression. Other useful results are regarding computing a physical effect. For example, Claim 1 recites "computing a resulting electric field." In summary regarding Examiner's statement (II), Applicant respectfully asserts that the claimed invention has numerous practical results as described above.

Examiner's statement (III) described above provides a quote from MPEP on the issue of the requirement of a "TANGIBLE RESULT." The beginning of this quote states, "The tangible requirement does not necessarily mean that a claim must be either tied to a particular machine or apparatus or ..." Thus, this quote acknowledges, as does MPEP 2106.01, that computer implemented methods satisfy the "tangible result" requirement. Furthermore, the use of a computer implemented method to compute a physical quantity is an additional tangible result.

Further guidance on what constitutes a "useful, concrete and tangible result" is given in MPEP 2106 IV D, which states, "For a further discussion of case law defining the line between eligible and ineligible subject matter, as well as..., see Annex II and Annex III of the *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility*, 1300 Off. Gaz. Pat. Office 142 (Nov. 22, 2005) (Patent Subject Matter Eligibility Interim Guidelines)." In particular, Annex II, Section B (ii) of those guidelines is titled "Useful, Concrete, and Tangible Result." The first paragraph of that section provides two examples of patentable subject matter:

"For example, the court in State Street noted that the claimed invention in Alappat 'constituted a practical application of an abstract idea (a mathematical algorithm, formula or calculation), because it produced "a useful concrete and tangible result"--smooth waveform.' Id. Similarly, the claimed invention in Arrhythmia 'constituted a practical application of an abstract idea (a mathematical algorithm, formula or calculation), because it corresponded to a useful, concrete and tangible thing—the condition of a patient's heart.' Id."

Applicant asserts that the compression of the present application is analogous to the smooth waveform of Alappat and further asserts that computing a physical effect (whether an electric field, a pressure, or otherwise) is analogous to the condition of a patient's heart. Thus, Applicant asserts that, according to the MPEP, either of these alone provides a useful, concrete and tangible result.

The Examiner raises the issue of Preemption on Page 5 of the Office Action of October 17, 2007, stating:

(IV) "Furthermore, as described in the specification in lines 10-11 of page 6, 'The terms "sources" and "physical sources" are uses herein to include all types of actual and/or fictitious sources.'

(V) Accordingly, even reciting 'computing electric field or ... are not for a particular practical application of the idea of compression of interaction data embodied therein but seeking to patent substantially every application of the idea of compression of interaction data, which is an attempt to patent the idea itself and is not permitted."

The Examiner again raise this issue in the Advisory Action of December 27, 2007, stating:

(VI) "Image compression itself does not appear to be an application of the idea to compress interaction data via processing disturbances. On the other hand, if the matrix of data generated by the argued single two dimensional image represents interaction data of any "physical source" (i.e., include all types of actual and/or fictitious sources as defined in the specification in lines 10-11 of page 6), claims in this instant application will also preempt applications to image compression."

In statement (V) the Examiner describes the judicial exemption as "the idea of compression of interaction data embodied therein" and in (VI) describes it as "the idea to compress interaction data via processing disturbances." An image may be described by a matrix of data, i.e. an interaction matrix, and parts of that matrix provide a matrix of disturbances that may be used to compress that image. Thus, image processing is a practical application of the judicial exemption "the idea to compress interaction data via processing disturbances."

The specification of the present application discloses "image processing" as an application (Page 29, Line 23). Nevertheless, compression of an image is a substantial application that is not within the claimed invention. For example, Claims 2 and 10 recite "using said compressed second portion of said transformed system of equations to compute a physical effect."

Regarding Examiner's comment (IV) above, Applicant understands this comment to suggest that the use of fictitious sources to compute an electric field or another physical quantity means that one is not really computing an electric field or other physical quantity. Applicant respectfully asserts that this interpretation is not supported by the disclosure of the present patent application, since the use of a method involving a judicial exception to compute a physical quantity does not necessarily imply that one did not compute a physical quantity. For example, in leading up to the statement in the specification that the Examiner quoted in (IV) above, the specification states (Page 5, lines 24-29 through Page 6, lines 1-2):

"Sometimes it is convenient to consider disturbances as being created by an equivalent source (e.g. a fictitious source) rather than a real physical source. For example, in most regions of space (a volume of matter for example) there are a large number of positive electric charges and a large number of negative electric charges. These positive and negative charges nearly exactly cancel each other out. It is customary to perform calculations using a fictitious charge, which is the net

difference between the positive and negative charge, averaged over the region of space. This fictitious charge cannot be identified with any specific positive or negative particle."

The specification also mentions using a fictitious "magnetic current" rather than an electric current in a calculation, and states (Page 6, lines 5-7):

"Nevertheless, it is known how to mathematically relate electric currents to equivalent magnetic currents to produce the same electromagnetic waves."

In the case of Claim 1, that claim recites "computing a resulting electric field due, at least in part, ..." In the case of Claim 55, it recites, "physical sources comprising at least one of an electromagnetic field, a heat flux, an electric field, a magnetic field, a pressure, a sound wave, a particle flux, a weak nuclear force, a strong nuclear force, and a gravity force." Thus, image compression is a substantial application that is not preempted by either Claim 1 or Claim 55.

There are further substantial applications that are not within the claimed invention. For example, even if one considers the pixels within an image to be a physical effect (as the Examiner suggests), stock prices or other economic data would not be a physical effect. Predictions of economic data often rely on the use of a matrix describing interactions of various economic quantities (an interaction matrix). Thus, predicting economic data would be a substantial application that is not preempted by the claimed invention.

The requirement of non-preemption, when it applies, does not limit a claimed invention to only one particular application. According to MPEP 2106 IV C 3, "One may not patent a process that comprises every 'substantial practical application' of an abstract idea, ..." Thus, it is sufficient to find one "substantial practical application" that is not within the claimed invention. Applicant respectfully asserts that he has done so.

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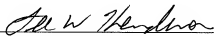
Summary

Applicant respectfully assert that Claims 1-22, 34, and 40-55 are allowable over the prior art, and Applicant request allowance of Claims 1-22, 34, and 40-55. If there are any remaining issues that can be resolved by a telephone conference, the Examiner is invited to call the undersigned attorney at (949) 721-6305 or at the number listed below.

Respectfully submitted,

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